

Application No. 10/065,866
Attorney Docket No. 129716
Amendment dated September 17, 2004
Reply to Final Office Action of August 27, 2004

REMARKS

The present application includes claims 1-25. Claims 8 and 19 were allowed. Claims 1-7, 9-18 and 20-25 were rejected. Claims 1, 3, 11, 12, 17 and 25 are amended in response to the Examiner's rejections.

Claims 1, 3 and 17 are amended to recite a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface.

Claim 11 is amended to recite maintaining a region of interest of a patient by tilting a patient positioning surface during a procedure involving movement of the patient positioning surface.

Claim 12 is amended to recite maintaining a region of interest of a patient by tilting a patient positioning surface during movement of the patient positioning surface.

Claim 25 is amended to recite a table for positioning a patient, where the table is capable of rotation, lift, and longitudinal motions and the table is capable of longitudinal tilt, and where a region of interest of the patient is maintained in an image area during tilt by tilting said table in an inverse kinematic relationship with one or more of lifting and longitudinal movements of the table.

Claims 11, 13, 15, 16 and 25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Nonaka et al. (U.S. Patent No. 6,094,760.)

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Claim 4 was rejected under 35 U.S.C. § 102(e) as being anticipated by Pattee.
(U.S. Patent No. 6,615,428.)

Claims 1, 2, 5, 6, 9, 10, 17 and 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Uosaki et al. (U.S. Patent No. 5,210,893.)

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Kamata. (U.S. Patent No. 5,237,600.)

Claims 7 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Uosaki et al. and further in view of Velazquez. (U.S. Patent No. 4,484,571.)

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Pattee.

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Velazquez.

Rejections under 35 U.S.C. § 102(b, e)

The Applicant first turns to the rejection of claims 11, 13, 15, 16 and 25 under 35 U.S.C. § 102(b) as being anticipated by Nonaka. Nonaka describes a bed system for radiation therapy. Specifically, Nonaka discloses a rotation drive mechanism in a treatment bed system providing for rotation about three independent axes and for transfer along three independent directions. (Abstract.) An acceleration sensor 26 detects

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acceleration in any one of three mutually perpendicular axes (namely the X, Y, and Z axes) during therapy caused by a patient's respiration. (col. 12, lines 63-67; col. 13, lines 1-18). When acceleration is detected, "vibration signals which are opposite in direction and equal in amplitude of the detected acceleration are added to each axis to hold the position of diseased part of a patient stationary." (col. 13, lines 15-18.) In this way, Nonaka describes 1) the measurement of acceleration along one of the three perpendicular axes and 2) correction for the measured acceleration by movement of the bed along each of the three perpendicular axes.

However, Nonaka does not teach or suggest maintaining a region of interest of a patient by tilting a patient positioning surface during a procedure involving movement of the patient positioning surface, as recited in claim 11. In addition, Nonaka does not teach or suggest a table for positioning a patient, where the table is capable of rotation, lift, and longitudinal motions and the table is capable of longitudinal tilt, and where a region of interest of the patient is maintained in an image area during tilt by tilting said table in an inverse kinematic relationship with one or more of lifting and longitudinal movements of the table, as recited in claim 25. Conversely, as described above, any movements of the bed to correct for measured accelerations in Nonaka occur along the X, Y, and Z axes. (col. 13, lines 13-18.) Thus, Nonaka does not teach any other movement of a patient positioning surface in order to maintain a region of interest other than movement along three mutually perpendicular axes. In this way, Nonaka is incapable of teaching

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maintaining a region of interest by 1) tilting a patient positioning surface or 2) tilting a patient positioning surface in an inverse kinematic relationship with lifting and/or longitudinal table movements, as recited in claims 11 and 25, respectively. Therefore, the Applicant respectfully submits that Nonaka is incapable of teaching elements of at least claims 11 and 25.

The present rejection encompasses claims 11, 13, 15, 16 and 25. Claims 11 and 25 are amended to recite limitations not taught by Nonaka. Claims 13, 15 and 16 depend from claim 11. Therefore, the Applicant respectfully submits that claims 11, 13, 15, 16 and 25 should be allowable.

The Applicant next turns to the rejection of claim 4 under 35 U.S.C. § 102(e) as being anticipated by Pattee. Pattee describes a dual stage telescoping imaging table. The table of Pattee is capable of moving only in a longitudinal direction. (col. 3, line 53 to col. 5, line 20.) That is, Pattee is devoid of any teaching of any other table movement other than in a longitudinal direction.

Conversely, claim 4 recites a patient positioning system including a lift subsystem for adjusting elevation of a patient positioning surface, a lateral subsystem for moving the patient positioning surface in a lateral direction, a tilt subsystem for tilting the patient positioning surface, and a rotation subsystem for rotating the patient positioning surface. Therefore, as Pattee merely describes longitudinal movement of a table and does not

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teach or suggest any other movement of a patient positioning surface, Pattee is incapable of teaching elements of at least claim 4. Thus, the Applicant respectfully submits that claim 4 should be allowable.

Rejections under 35 U.S.C. § 103(a)

The Applicant next turns to the rejection of claims 1, 2, 5, 6, 9, 10, 17 and 20-24 under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Uosaki. As described above, Nonaka describes a bed system for radiation therapy. The table of Nonaka rotates in a pitching direction around a pitching axis perpendicular to the axial center of a patient. (col. 8, lines 38-43.) The pitching rotation of Nonaka's table is enabled by a pitching rotation drive mechanism 80. (col. 10, lines 23-29; FIGS. 7, 8 and 10.) The pitching rotation drive mechanism 80 includes an electric motor 86, a gear mechanism 87, and a torque limiter 88. (col. 10, lines 23-29; FIGS. 7, 8 and 10.) In another embodiment, Nonaka's table includes a p-axis motor and a p-axis for rotating the table in a pitching rotation. (col. 12, lines 10-26.) Therefore, Nonaka describes the pitching rotation of a table by a motor-gear-torque limiter combination or a motor-axis combination.

However, Nonaka does not teach or suggest a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in claims 1 and 17. Conversely, as described above, Nonaka merely describes the use of a motor-gear-torque

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limiter combination or a motor-axis combination to rotate a table about a p-axis. (col. 10, lines 23-29; col. 12, lines 10-26; FIGS. 7, 8 and 10.) Thus, the Applicant respectfully submits that Nonaka does not teach or suggest elements of at least claims 1 and 17.

Uosaki describes a couch apparatus for medicine. The couch apparatus is moveable along vertical and longitudinal axes by an elevating mechanism and a sliding mechanism, respectively. (col. 3, lines 43-59; col. 4, line 59 through col. 5, line 3.) However, Uosaki does not describe any other motion of the couch apparatus. Consequently, Uosaki is incapable of remedying the shortcomings of Nonaka, as described above.

Specifically, Uosaki does not teach or suggest any tilt subsystem at all, whether or not such a subsystem includes a ball screw and rotary nut or otherwise. As claims 1 and 17 both recite a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, Uosaki is incapable of teaching or suggesting elements of at least claims 1 and 17. Thus, the Applicant respectfully submits that Uosaki does not teach or suggest elements of at least claims 1 and 17.

Moreover, assuming for the sake of argument that one were motivated to combine Nonaka and Uosaki, the combination would similarly fail to teach or suggest elements of at least claims 1 and 17. As described above, neither Nonaka or Uosaki, alone or in combination, teach or suggest a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in claims 1 and 17. Therefore, the

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Applicant respectfully submits that a combination of Nonaka and Uosaki also fails to teach or suggest elements of at least claims 1 and 17.

The present rejection encompasses claims 1, 2, 5, 6, 9, 10, 17 and 20-24. Claims 1 and 17 are amended to recite elements not taught or suggested by Nonaka or Uosaki, taken alone or in combination. Claims 2, 5, 6, 9, 10, and 20-24 depend from claims 1 and 17. Therefore, the Applicant respectfully submits that claims 1, 2, 5, 6, 9, 10, 17 and 20-24 should be allowable.

The Applicant next turns to the rejection of claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Kamata. Kamata describes a patient support table for radiographing with an x-ray camera. The table of Kamata is capable of being elevated in a vertical direction, (col. 4, lines 12-24), rotated in a horizontal plane, (col. 4, lines 55-64), and swung in a vertical plane (col. 4, line 65 to col. 5, line 9.)

However, Kamata does not remedy the shortcomings of Nonaka, as described above. Specifically, Kamata does not teach or suggest a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in claim 3. Kamata is entirely devoid of any disclosure describing any tilt subsystem. Therefore, the Applicant respectfully submits that Kamata is incapable of teaching or suggesting elements of at least claim 3.

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In addition, assuming for the sake of argument that one would be motivated to combine Nonaka and Kamata, the combination would similarly fail to teach or suggest elements of at least claim 3. As described above, neither Nonaka or Kamata, alone or in combination, teach or suggest a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in claim 3. Therefore, the Applicant respectfully submits that a combination of Nonaka and Kamata does not teach or suggest elements of at least claim 3.

The present rejection encompasses claim 3. The Applicant has amended claim 3 to recite limitations not taught or suggested by Nonaka or Kamata, taken alone or in combination. Therefore, the Applicant respectfully submits that claim 3 should be allowable.

The Applicant next turns to the rejection of claims 7 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Uosaki and further in view of Velazquez. Velazquez describes a patient security and restraint system. The table assembly of Velazquez is moveable vertically and longitudinally. (col. 3, lines 19-25.) However, Velazquez is devoid of any disclosure of any other movements of the table assembly. Therefore, Velazquez is incapable of teaching or suggesting a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in

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claims 1 and 17. Thus, the Applicant respectfully submits that Velazquez does not teach or suggest elements of at least claims 1 and 17.

Velazquez also fails to remedy the shortcomings of Nonaka and Uosaki, as described above. Specifically, assuming for the sake of argument that one would be motivated to combine Nonaka, Uosaki, and/or Velazquez, none of Nonaka, Uosaki, and/or Velazquez, alone or in combination, teach or suggest a tilt subsystem including a ball screw and rotary nut for tilting a patient positioning surface, as recited in claims 1 and 17. Therefore, the Applicant respectfully submits that Nonaka, Uosaki, and/or Velazquez, taken alone or in combination, fail to teach or suggest elements of at least claims 1 and 17.

The present rejection encompasses claims 7 and 18. Claims 1 and 17 are amended to recite elements not taught or suggested by Nonaka, Uosaki, and/or Velazquez, taken alone or in combination. Claims 7 and 18 depend from claims 1 and 17, respectively. Therefore, the Applicant respectfully submits that claims 7 and 18 should be allowable.

The Applicant next turns to the rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Pattee. As described above, neither Nonaka nor Pattee, taken alone or in combination (assuming for the sake of argument that one would be motivated to combine the two) teach or suggest maintaining a region of interest

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of the patient by tilting a patient positioning surface during movement of the patient positioning surface, as recited in claim 12. Thus, the Applicant respectfully submits that claim 12 should be allowable.

The Applicant next turns to the rejection of claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Nonaka in view of Velazquez. Velazquez does not remedy the shortcomings of Nonaka, as described above. Specifically, Velazquez is entirely devoid of any disclosure relating to maintaining a region of interest. As Nonaka alone does not teach or suggest maintaining a region of interest of the patient by tilting the patient positioning surface during a procedure involving movement of the patient positioning surface, as recited in claim 11, and Velazquez is entirely devoid of any disclosure relating to maintaining a region of interest, a combination of Nonaka and Velazquez (assuming for the sake of argument that one would be motivated to combine the two) also similarly fails to teach or suggest elements of at least claim 11. As claim 14 depends from claim 11, the Applicant respectfully submits that claim 14 should be allowable.

Therefore, the Applicant respectfully submits that the claims of the present application should be allowable over the prior art.

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CONCLUSION

The Applicant respectfully submits that the claims of the present invention should be in condition for allowance. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 07-0845.

Respectfully submitted,

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